CLAIMS

What is claimed is:

1. A method of forming an ablative coating on at least a portion of a structure comprising:

forming a mold having a cavity configured to cooperatively receive the at least a portion of a structure;

placing the at least a portion of the structure in the cavity of the mold;

introducing an ablative mixture into the mold cavity such that it is in contact with the at least a portion of the structure; and

curing the ablative mixture to bond the ablative mixture to a surface of the at least a portion of the structure.

2. The method of claim 1, further comprising heating the ablative mixture to reduce the viscosity prior to introducing the mixture into the mold.

3. The method of claim 1, wherein said curing the ablative mixture includes curing the ablative mixture at atmospheric pressure.

4. The method of claim 1, wherein said curing the ablative mixture includes a first curing stage of curing the ablative mixture at a temperature in the range of approximately 70 to 95°F.

5. The method of claim 4, wherein the first curing stage is conducted for approximately 8 hours.

6. The method of claim 5, wherein said curing the ablative mixture includes a second curing stage of curing the ablative mixture at an elevated temperature subsequent the first curing stage.

7. The method of claim 6, wherein the second curing stage further includes curing the ablative mixture at approximately 110° F for approximately 8 hours.

8. The method of claim 1, further comprising providing a relief in the mold for receipt of ablative mixture in excess of that required by the mold cavity having the at least a portion of the structure therein.

9. The method of claim 8, further comprising locating the relief above the cavity in the mold to allow air bubbles to flow into the excess ablative mixture contained in the relief.

10. The method of claim 8, further comprising removing the mold subsequent the curing and trimming the cured excess ablative mixture.

11. The method of claim 1, further comprising removing the mold subsequent the curing and buffing at least a portion of a surface of the cured ablative mixture.

12. The method of claim 1, further comprising removing the mold subsequent the curing and patching a at least one vug in a surface of the cured ablative mixture by placing an additional amount of ablative mixture over the at least one vug and curing the additional amount of ablative mixture.

13. The method of claim 12, further comprising shaping the additional amount of ablative mixture prior to curing thereof.

14. The method of claim 1, further comprising configuring the mold cavity such that the ablative mixture introduced therein will form a coating of varied thickness over a surface of the at least a portion of the structure.

15. The method of claim 14, further comprising placing spacers between the surface

of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating.

16. The method of claim 15, further comprising preforming the spacers from an ablative mixture.

17. The method of claim 1, further comprising configuring the mold cavity to define at least one stay out zone such that the ablative mixture introduced into the mold cavity forms around the at least one stay out zone but does not impinge into the at least one stay out zone.

18. The method of claim 17, wherein said defining at least one stay out zone includes placing a boss about an area of the structure prior to introducing the ablative mixture into the mold cavity and removing the boss subsequent the curing of the ablative mixture.

19. A method of forming an ablative coating on at least a portion of a structure, the method comprising:

forming a mold with a cavity configured to cooperatively receive the at least a portion of the structure;

placing the at least a portion of the structure in the mold cavity ;

mixing a salt filled epoxy resin base, a fiber filled polyamide hardener and a silicone resin modifier to form an ablative insulation mixture;

introducing the ablative insulation mixture into the mold cavity so that the ablative insulation mixture contacts a surface of the at least a portion of the structure; and

curing the ablative insulation mixture.

20. The method of claim 19, further comprising placing a first coat of a release agent on a surface of the mold cavity and subsequently baking the mold prior to placing the structure in the mold.

21. The method of claim 20, wherein the baking the mold includes baking the mold at a temperature of approximately 200°F for approximately 6 hours.

22. The method of claim 20, further comprising placing a second coat of a release agent on the surface of the mold cavity prior to placing the structure in the mold.

23. The method of claim 19, further comprising introducing the ablative insulation mixture into the mold cavity through at least two locations in the mold.

24. The method of claim 19, wherein the curing of the ablative insulation mixture includes curing at an atmospheric pressure.

25. The method of claim 24, wherein the curing of the ablative insulation mixture includes a first curing stage of curing the ablative insulation mixture at approximately 70 to 95°F for approximately 6 to 8 hours from a time when the ablative insulation mixture is first introduced into the mold.

26. The method of claim 25, wherein the curing of the ablative insulation mixture includes a second curing stage of curing the ablative insulation mixture at an elevated temperature of approximately 110°F for approximately 8 hours subsequent the first stage.

27. The method of claim 26, further comprising removing the mold from the structure and the cured ablative insulation mixture.

28. The method of claim 19, wherein the preparing an epoxy ablative insulation mixture includes mixing the salt filled epoxy resin base, the fiber filled polyamide hardener and the silicone resin modifier with a mixing machine.

29. The method of claim 28, wherein the preparing an epoxy ablative insulation

mixture further includes mixing the salt filled epoxy resin base, the fiber filled polyamide hardener and the silicone resin modifier under pressure.

30. The method of claim 19, wherein the preparing an epoxy ablative insulation mixture includes mixing the salt filled epoxy resin base, the fiber filled polyamide hardener and the silicone resin modifier by hand.

31. The method of claim 30, wherein the preparing an epoxy ablative insulation mixture includes allowing the mixture to sit for a predetermined time subsequent the mixing by hand and prior to the introducing the ablative insulation mixture into the mold.

32. The method of claim 31, further comprising configuring the mold with a relief adjacent the mold cavity and flowing an excess of the ablative insulation mixture into the relief.

33. The method of claim 32, further comprising trimming the excess of ablative insulation mixture subsequent the curing of the ablative insulation mixture.

34. An aeroskirt component comprising:
a structure; and
an ablative insulation coating molded directly to a surface of the first structure.

35. The aeroskirt component of claim 34, further comprising at least one spacer embedded in the ablative insulation coating, the at least one spacer being formed of an ablative insulative material.

36. The aeroskirt component of claim 34, wherein the ablative insulation coating has thickness which varies from a first portion of the surface to a second portion of the surface of the structure.

37. The aeroskirt component of claim 36, further comprising at least two spacers formed of an ablative insulative material, at least one spacer of the at least two being located proximate the first portion of the surface of the structure and at least one other spacer of the at least two being located proximate the second portion of the surface of the structure.

38. The aeroskirt component of claim 34, further comprising at least one stay-out zone formed in the ablative coating comprising an ablative coating-devoid area adjacent an otherwise coated surface of the structure.

39. The aeroskirt component of claim 34, wherein the ablative insulation coating includes an epoxy resin.

40. The aeroskirt component of claim 39, wherein the ablative insulation coating includes a fiber reinforcement component.

41. The aeroskirt component of claim 39, wherein the ablative insulation coating includes a mixture of a salt filled epoxy resin base, a fiber filled polyamide hardener and a silicone resin modifier.

42. The aeroskirt component of claim 34, wherein the ablative insolation coating is substantially devoid of air bubbles.